BIODIESEL SUPPLY
Haycock Petroleum

Haycock PETROLEUM LOCATIONS

- California – Bishop / Mammoth
- Idaho – Preston
- Nevada – Caliente, Carlin, Las Vegas, North Las Vegas
- Utah – Logan, North Salt Lake, Ogden, Price, Salt Lake City, St. George, Tremonton

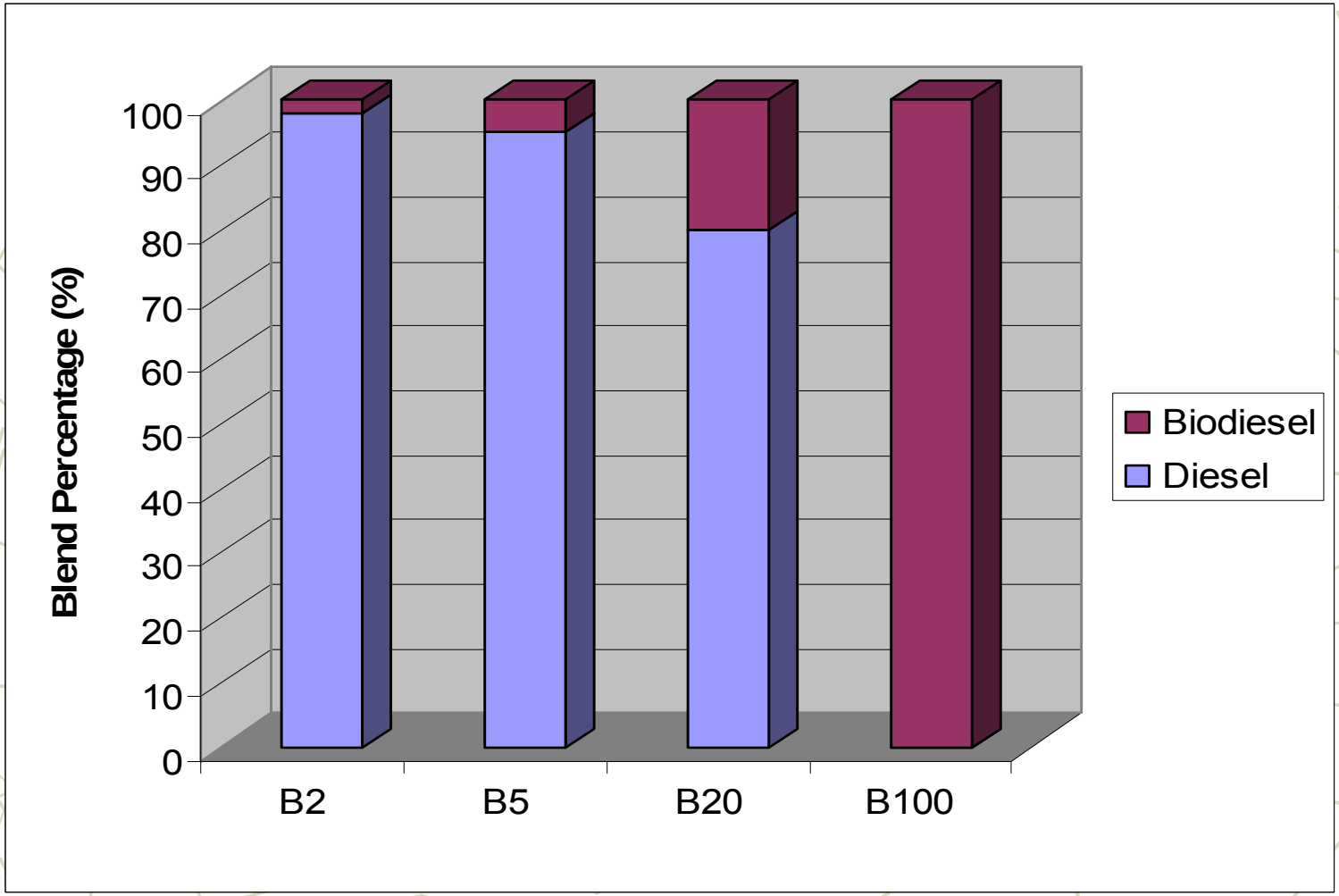
Products

- Diesel Fuels
- Unleaded Gasoline
- Lubricants
- Coolants
- Biodiesel

Conversion Steps ...

1. Choose blend ratio: B5, B10, B20, winter or summer blend.
2. Inspect customer storage tanks for water and microbial growth.
   - Treat if necessary
3. Inspect service truck storage tanks for contamination.
   - Treat if necessary
4. Temporarily increase fuel filter inventory.
   - B-10 & B-20 blends tend to clean out dirty fuel systems
5. Insure that proper cold flow additives are used.
   - Blends of B20 or greater are not recommended if temperature is below 0°F.
6. Only use bio-diesel made from virgin stock. ASTM D6751

Biodiesel and Biodiesel Blends



Example: B5 is 5% biodiesel & 95% diesel fuel

Main Points

- Three options for B100 storage: inside a heated insulated warehouse or outside in an insulated tank with emersion heaters or underground storage. All options require the ability to measure the temperature of the product stored and the ability to collect samples. We install two heaters in the event one fails.

Main Points

- B5 – B20 storage requires some preparation to existing tanks in service. First you need to sample the fuel for microbial growth and water. Second treat the tank for microbial growth with a bug killer and remove water. A B5 blend is basically benign; it acts as if it is 100% conventional diesel.

Main Points

- What is conventional diesel?

Standard Low Sulfur Diesel is 500 ppm and can still be used in off-highway equipment until 2010.

As of November 2006 all underground mines Haycock services are on 15pppm Ultra Low Sulfur Diesel.

Main Points

- Proper elastomers in transfer pump seals and delivery hoses. Some seals and hose will deteriorate after continued exposure to **high concentrations** of Biodiesel (greater than B-20).

Main Points

- Proper anti-gelling additives are required in cold climate conditions for bio blends. You can not treat B100, it must be blended to reduce CFPP temperatures. Once gelling has occurred anti–gel treatments are ineffective, you must add heat to break down the crystal structure formations.

Main Points

- Shelf life is an issue, six months is the rule of thumb before the product starts to oxidize and break down. This is something to consider in regards to emergency gensets. A stability/oxidation package should be added to the Biodiesel blend for long term storage applications.
- Haycock Petroleum only delivers fully additized biodiesel blends.

Main Points

- Proper mixing of B100 with conventional diesel in the storage tank should be managed by experienced petroleum distributors.
- Haycock Petroleum recommends the customer take delivery of pre-blended biodiesel grades.

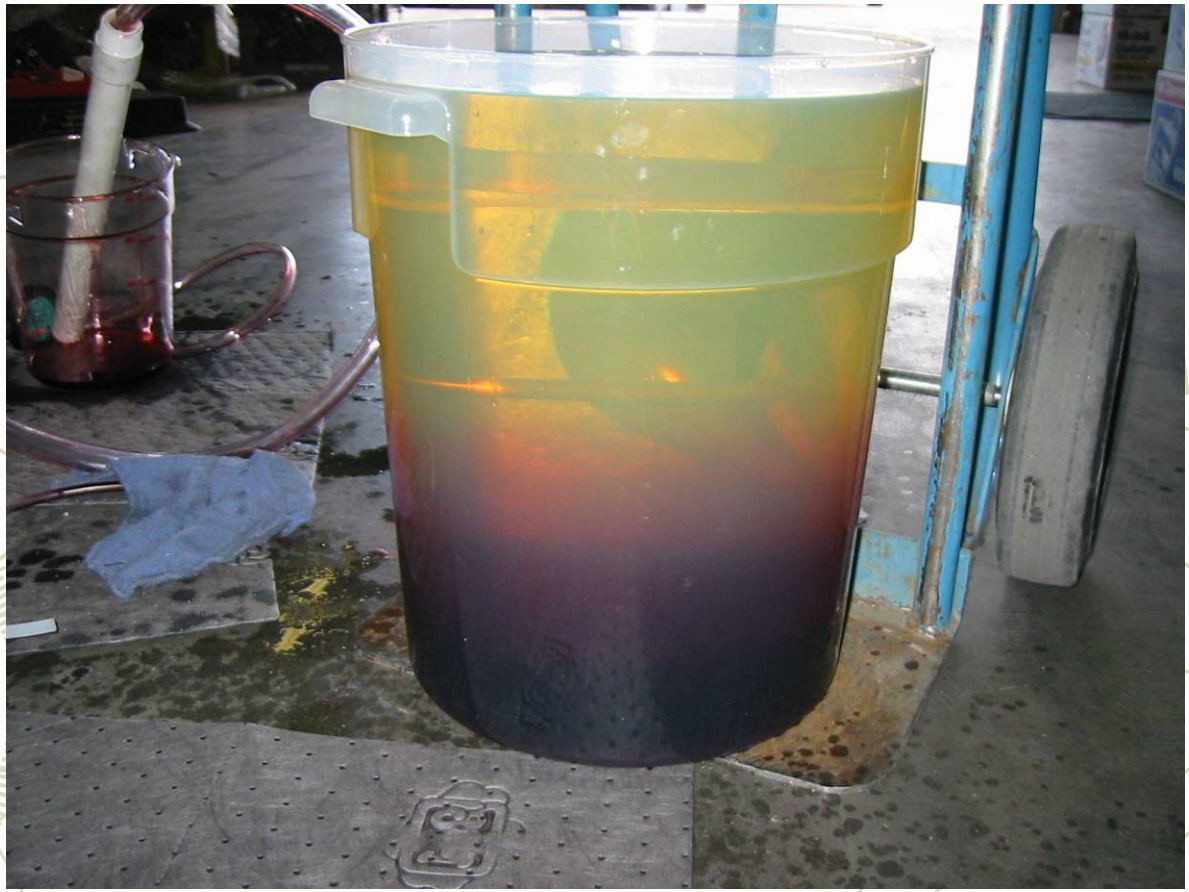
Basic Blending Facts

- Biodiesel can be blended with any kind of distillate fuel, diesel, kerosene, heating oil etc.
- The more mixing the better.
- Biodiesel is slightly heavier than diesel fuel.
- Because it is heavier it could stay on the bottom of the tank and not blend at all if improperly handled.

Bottom Loading

- B20 is frequently blended in bottom loading tank trucks
- Biodiesel loaded first, followed by diesel fuel where mixing begins.
- Putting B100 into a cold empty truck can cause the B100 to gel which prohibits mixing properly
- Consider loading half of the diesel then biodiesel followed by the balance of the diesel. This will help prevent the biodiesel from freezing to the internal parts of the tank truck.

Bottom Loaded B-20



Complete separation of product

Splash or top loading

- Simply stated, the biodiesel and diesel fuel are loaded into a tank separately with relatively little mixing occurring as the fuels are placed in the tank.
- The tank is usually the actual delivery truck.
- The delivery truck movement as well as the physical drop at the end users site provides adequate agitation to successfully blend the fuels.
- Normally successful, but on occasion difficulties in mixing can be encountered if the biodiesel is loaded into the vessel first under very cold temperatures.

Top Loading B-100

B-20 mix splash loaded

Top loaded

B-20

Top loaded after 24 hrs

Separation occurred

Existing Blending Methods

- B100 can be blended with diesel by the end user. However some form of mixing must occur in the blended biodiesel tank (not recommended).
- Blended (via a variety of means) by a jobber and offered for sale as a finished blend usual method of purchase.
- Blended at a petroleum terminal rack by a pipeline or terminal company and offered as a finished fuel.
  - The finished fuel would be sold directly to the jobber for direct redistribution to the end user.

Injection Blending

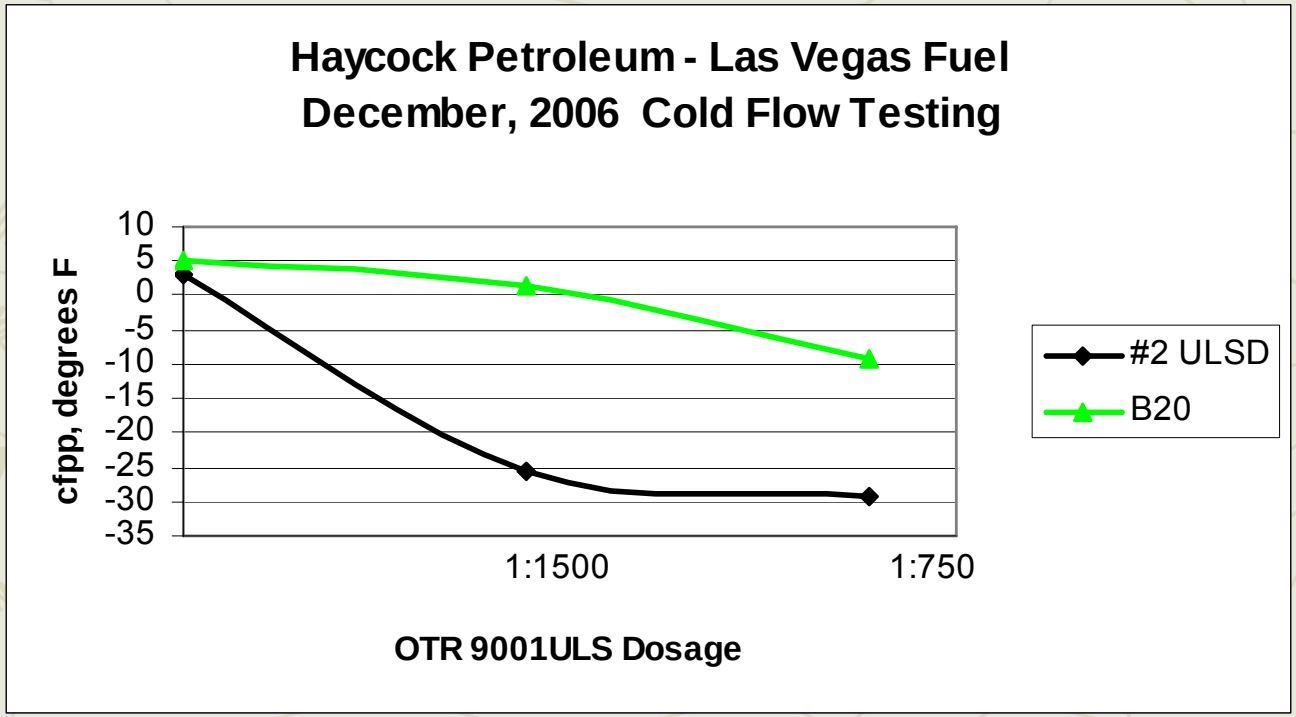
- Biodiesel is added to a stream of diesel fuel as it travels through a pipe or hose in such as way that the biodiesel and diesel fuel become thoroughly mixed by the turbulence encountered in the pipe.
- This is similar to the way most additives are blended into diesel fuel today and is most commonly used at a pipeline terminal and rack.

Cold Weather Blending

- Concerns when the fuel temperature falls below the cloud point of either fuels, independently or as a finished fuel.
- Always maintain biodiesel at 50 – 60F prior to blending with diesel fuel.

Haycock Petroleum Company - Las Vegas fuel testing - December, 2006

OTR 9001ULS			
Treatment Rate	ppm	#2 ULSD	B20
0	0	3.2	5
1:1500	667	-25.6	1.4
1:750	1333	-29.2	-9.4

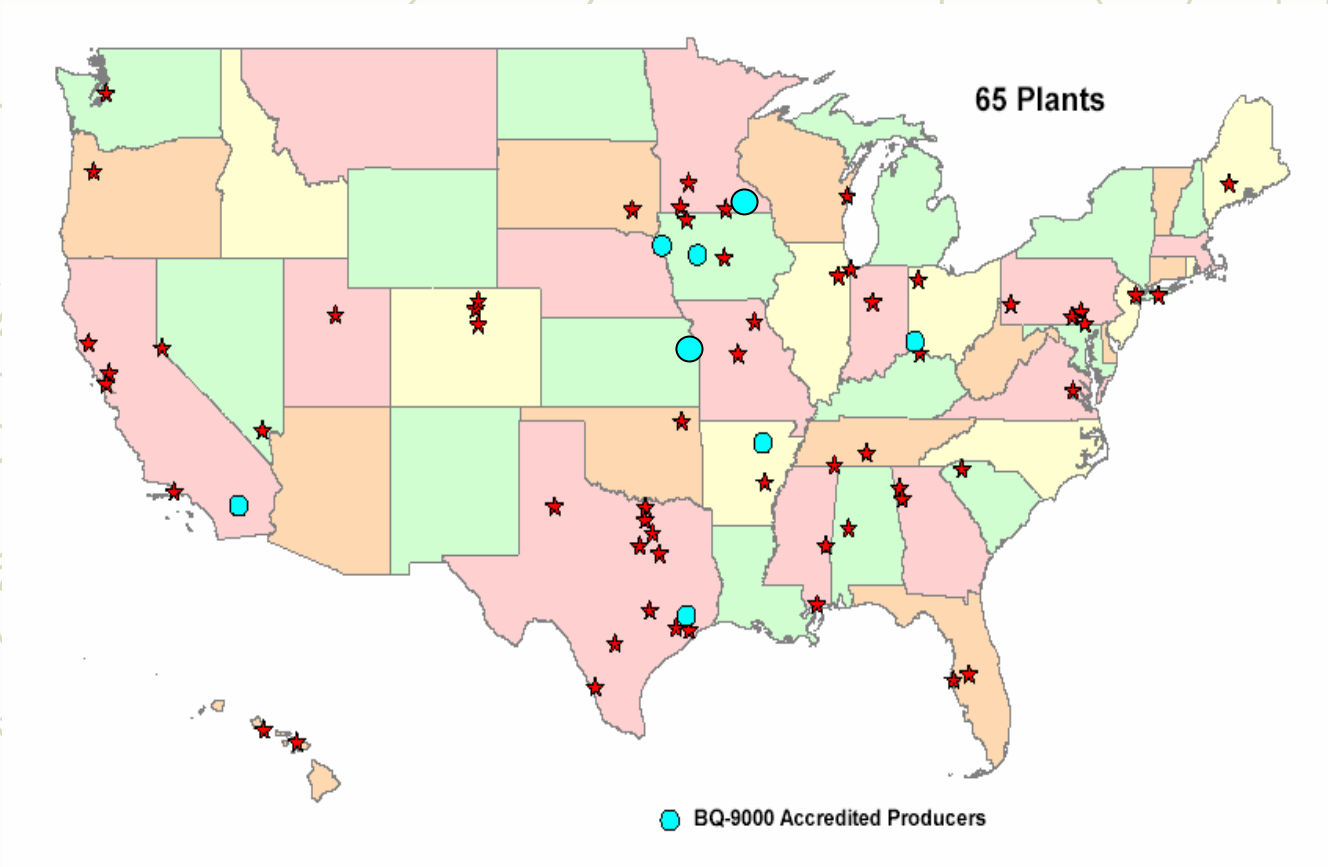


Current Biodiesel Plants

2004 Production: 25,000,000 Gallons

2005 Production: 75,000,000 Gallons

Current Production Capacity: 395,000,000 Gallons



Biodiesel Commercial Distributors